

CLAIMS:

1. A method for modifying the surface properties of a silicone or siloxane-based polymer or copolymer substrate comprising exposing said surface to (1) an aqueous solution comprising said agent and having a Ph above or below 7.0 and (2) gamma radiation, said exposure taking place at a pH, gamma dose, temperature and for a time sufficient to hydrolyze said surface so as to a) form thereon functional groups reactive with said agent and b) induce polymerization of said agent, thereby forming a graft-polymerized coating on said surface.

2. The method of claim 1 wherein said polymerizable agent is a monomer, oligomer or mixture thereof, the graft polymerization of which with the surface forms a coating more hydrophilic than the uncoated surface.

3. The method of claim 2 wherein said substance is N-vinylpyrrolidone, 2-hydroxyethylmethacrylate, an alkali salt of sulfopropyl acrylate, a vinylsulfonic acid an amino functional monomer, oligomer or mixture thereof, acrylamide, dimethylacrylamide, polyethylene glycol monomethacrylate, hydroxypropylacrylamide, methacrylic acid or dimethylaminoethylmethacrylate.

4. The method of claim 1 wherein said substrate comprises polydimethylsiloxane, or a copolymer of a siloxane with a polyester, polyolefin, polyurethane, polyimide, polyamide, polysulfone, polysulfide, polyacrylate, polyacrylic, polystyrene, polymethacrylate, ethylene-propylene copolymer, polybutadiene, styrene-butadiene copolymer, styrene-ethylene-butadiene copolymer, polycarbonate, fluorocarbon polymer, polyvinylchloride, or mixtures thereof.

5. The method of claim 1 wherein said solution contains a metal hydroxide to achieve said pH.

6. The method of claim 5 wherein said metal hydroxide is an alkali earth metal hydroxides or an alkali metal hydroxides.

7. The method of claim 5 wherein said metal hydroxide is a sodium or potassium hydroxide.

8. The method of claim 1 wherein the concentration of said substance in said solution is from about 0.01% to about 50%, by weight.

9. The method of claim 1 including the step of pre-soaking said substrate surface in a solution of from about 5% to about 95% by weight, of said agent prior to polymerization for a period of time and at a temperature sufficient to facilitate diffusion of at least a portion of said agent into said substrate surface.

10. The method of claim 1 wherein said graft-polymerization conditions comprise gamma or electron beam irradiation.

11. The method of claim 1 wherein the total gamma or electron beam dose is in the range of from about 0.001 to about 0.5 Mrads, the gamma dose rate is in the range from about 10 to about 2500 rad/min, and the electron beam dose rate is from about 10 to about 10^8 rads/min.

12. The method of claim 1 including the step of incorporating in said polymerized coating a drug.

13. The method of claim 12 wherein said drug is an anti-microbial agent.

14. The method of claim 12 wherein said drug is a therapeutic agent.

15. A composition of matter prepared by the method of claim 1.

16. An article of manufacture comprising the composition of matter of claim 15.

17. The article of manufacture of claim 16 comprising an intraocular lens, ocular implant, catheter, pacer lead, surgical tubing, endotracheal tube, blood bag, peripheral nerve graft, contact lens, dialysis shunt, breast implant, soft tissue implant for plastic surgery,

myringotomy tubing, glaucoma shunt, surface interface device for neural connections, hernia repair membrane or bio-DNA chip.